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**Remarks**

Claims 1-6, 8-20, 26-28 and 31 are pending. Claims 21-25, 29 and 30 have been withdrawn from consideration. Claim 7 is cancelled. Claims 1, 6 and 8 are amended. Claim 31 has been added

**§ 112 Rejections**

Claims 1-5, 9-20 and 26-28 stand rejected under 35 USC § 112, first paragraph, because the specification, while enabling the structure of Formula I, does reasonably provide enablement for fluorochemical esters having a formula outside of Formula I. The Rejection is traversed.

The present invention provides, *inter alia*, fluorochemical ester compositions comprising fluorine-containing repeatable units and fluorine-containing terminal groups. The compositions can be used, for example, to impart water-repellency and stain-release properties to a variety of substrates (see e.g., page 3, lines 10-28). The compositions appear to impart better water and oil resistance to substrates than compositions containing only pendant perfluorinated groups or only terminal perfluorinated groups (see e.g., the advancing contact angles and receding contact angles data for water and n-hexadecane shown, for example, in Examples 1-4 vs. Comparative Examples C1-C3). The claims are directed a reaction product of a) one or more fluorinated polyols, b) one or more polyacyl compounds, and c) one of more fluorine-containing monofunctional compounds. Each of the reactants, a-c, and reaction conditions are fully described, as so enable one skilled in the art to make and use the invention without undue experimentation.

It is incorrect to assert "that there are literally thousands of ways applicant's claimed components (a), (b), and (c) can react during a condensation type reaction". Simply, the polyol and polyacyl compounds may react to form an ester oligomer. Depending on which component is in excess, the ester oligomer will be terminated with hydroxyl groups or carboxylic acid groups, which will then be "end-capped" with the monofunctional fluorine-containing compound, bearing the appropriate functional group.

The Office Action entirely fails to meet the standard set by court decisions and the USPTO for assessing enablement and compliance with 35 USC §112, first paragraph. The MPEP summarizes the proper standard for enablement in MPEP §2164. For example, "[t]he test for enablement is whether one reasonably skilled in the art could make or use the invention from the

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disclosures in the patent coupled with information known in the art without undue experimentation" (MPEP §2164.01, "Test of Enablement"). Also, "[A]s long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement and 35 U.S.C. 112 is satisfied" (see MPEP §2164.01(a), "How to Make the Claimed Invention"). Under the heading "Undue Experimentation Factors", MPEP §2164.01(a) lists eight factors that should be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any unnecessary experimentation is "undue". These factors are:

- (A) The breadth of the claims;
- (B) The nature of the invention;
- (C) The state of the prior art;
- (D) The level of one of ordinary skill;
- (E) The level of predictability in the art;
- (F) The amount of direction provided by the inventor;
- (G) The existence of working examples; and
- (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The Office Action alludes to, at best, only a few of these factors and do not discuss them in adequate or even any detail. Applicant's claim breadth is clear (especially in view of the definitions provided in Appellants' written description) and apparently has not been questioned (*viz.*, Factor A above). The invention involves fluorochemical polymers, an established field that already has considerable available prior art, as partly evidenced by the U.S. and foreign patents and literature articles cited in Applicant's Information Disclosure Statement dated May 17, 2001 (*viz.*, Factors B and C above). The level of ordinary skill is relatively high, with participants often having advanced degrees (*viz.*, Factor D above). No reasoned evidence has been advanced in the Office Action that the level of predictability in the fluorochemical polymer art is so low as to make it unlikely that ordinary person could make and use the claimed fluorochemical compositions (*viz.*, Factor E above). The written description contains extensive definitions, ample detailed description including the exemplary written description support passages cited above, and 29 comprehensive working examples (*viz.*, Factors F and G above). No reasoned evidence has been advanced in the Office

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Action that an unreasonable quantity of experimentation will be needed to make or use the invention (viz., Factor H above).

MPEP §2164.01(a) also points out that "It is improper to conclude that a disclosure is not enabling based on an analysis of only one of the above factors while ignoring one or more of the others. The examiner's analysis must consider all the evidence related to each of these factors, and any conclusion of nonenablement must be based on the evidence as a whole." Clearly, in this instance the Examiner has not analyzed the required factors and has not met the applicable standard.

In making the rejection, the Office Action appears to assert that Applicant's claim format is improper. It states: "it must be pointed out that applicant's claims are directed to a fluorochemical ester composition and not to a method of making a fluorochemical ester composition even though claim 1 is written as a product-by-process claim."

Applicants assert that the claim format is entirely proper and note "[t]he patentability of a claim to a reaction product of A with B is not precluded". (See *Ex parte Simons*, 86 U.S.P.Q. 336, PO Bd. App 1949). Further it is incorrect to characterize Applicant's claim as product-by-process. *In re Stepan*, 394 F.2d 1013, 156 USPQ 143 (CCPA 1967) is instructive in this regard: "[d]efining a claimed product as the acid phosphate of the condensation product of formaldehyde and a salt of a certain compound does not make the claim a product-by-process claim".

Applicants request that the rejection of claims 1-5, 9-20 and 26-28 under 35 U.S.C. §112, first paragraph be withdrawn.

Claims 1-20 and 26-28 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The rejections are overcome by amendments and arguments presented herewith.

Claim 1 is said to be indefinite because there is no antecedent basis for the terms "said compounds". This term has been deleted from the claim

Claim 1 is further said to be indefinite "in regards to what the basic structure of the condensation reaction is since none is listed, but the condensation product is claimed nevertheless". The rejection is traversed.

As previously argued, the claim format is asserted to be proper. Applicants identify, in the preamble of the claim, that the product is a fluorochemical ester composition. It is the reaction product of the listed components a-c. One skilled in the art, aided by the description of each

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component, and the means of reacting the same, would be in possession of the instant invention. It would be understood, that the reaction product may be a complex mixture, but requiring Applicants to introduce a formula would unduly limit the scope of the invention M.P.E.P. 2173.05(t) states "[a] claim to a chemical compound is not indefinite merely because a structure is not presented".

Claims 6 and 8 are said to be indefinite in regards to the phrase "with all perfluorocarbon chains having 1 to 6, preferably 1 to 4 carbon atoms". The word "chains" refers to that of the perfluoroheteroalkyl group, and the claim has been amended to clearly indicate the object of this limitation. The alternative limitations of the carbon number have been deleted.

Claim 7 is said to be indefinite due to the table format. Claim 7 has been cancelled and new claim 31 added to provide the claim in a Markush format as suggested by the Examiner.

In summary, Applicants submit that the rejection of claims 1-20 and 26-28 under 35 USC § 112, second paragraph, has been overcome, and that the rejection should be withdrawn.

### § 103 Rejections

Claims 1-6, 8-20 and 26-28 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. 6,586,522 (Jariwala et al.) or U.S. 6,174,974 (Jariwala et al.) or U.S. 6,288,157 (Jariwala et al.) or U.S. 6,127,485 (Klun et al.) or U.S. 6,238,798 (Kang et al.). The rejections are traversed.

It is incorrect to assert that that the references disclose Applicants reaction product of components a-c.

U.S. 6,586,522 (Jariwala et al.) describes a fluorochemical ester composition comprising at least two repeat units derived from 1) the reaction product of a dicarboxylic acid and a polyol (or or both of which is aromatic or heteroaromatic) and 2) a fluorochemical endgroup derived from a) a dicarboxylic acid and a fluorine-containing monoalcohol, or a polyol and a fluorine-containing monocarboxylic acid.

Jariwala '522 do not describe Applicant's fluorochemical esters comprising the reaction product of a fluorinated polyol. The '522 polyols are taught at reference column 10, line 23 to column 12, line 25. Fluorinated polyols are neither taught nor suggested. The reference disclosure may be compared to Applicant's disclosure of fluorinated polyols from page 12, line 29 to page 15, line 20. Direct comparison of Applicant's data with that of Jariwala '522 is not possible, as Applicant's provide no experimental data of esters derived from aromatic dicarboxylic acids or polyols (as required by '522) as well as other differences. However, in general, the performance of

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Applicant's oligomers, having fluorinated endgroups, and groups derived from fluorinated polyols, is better than compounds having only fluorinated endgroups or only fluorinated groups derived from fluorinated polyols. This may be illustrated with respect to comparative Example C7 and Examples 5 and 6 on page 44. C7 uses a non-fluorinated polyol (hexanediol), while Examples 5 and 6 use a fluorinated polyol, FBSEE.

U.S. 6,174,964 (Jariwala et al.) and U.S. 6,288,157 (Jariwala et al.) each describe fluorochemical oligomeric compounds having both fluorinated and non-fluorinated groups pendant from a carbon-carbon backbone. The Examiner's attention is directed to Formula IV in column 4 of the '964 reference and to Formula IV in column 4 of the '157 reference. The oligomers are prepared by oligomerization of unsaturated fluorinated compounds V, as shown in Scheme I in column 8 of each respective reference.

Contrary to the assertion in the Office Action, the '964 and '157 references do not teach a fluorochemical ester, which is the reaction product of a fluorinated polyol, a polyacyl compound and a fluorinated monofunctional compound. Although the reference oligomers may be used to provide oil and water repellence to fibers, they represent a fundamentally difference class of compounds.

U.S. 6,127,485 describes fluorochemical esters and amides of the Formulas I to IV, comprising a fluorinated, preferably perfluorinated, alkyl group, and a group A, derived from derived from a dimer or trimer acid, or a group A', derived from a mono- or polyfunctional alcohol or amine. The only polyols are derived from dimer acid, as described at reference column 6, lines 58-63. As with the '522 reference describe above, there is no teaching or suggestion that the polyol of A' is a fluorinated polyol, as required by Applicant's claims. Although the "dimer-derived" materials are said to be useful in treating fibrous substrates, they again represent a fundamentally difference class of compounds.

U.S. 6,238,798 (Kang et al.) describes ceramer composition comprising colloidal inorganic particles and a free-radically curable binder precursor. The binder precursor is of the formula  $(R_A)_x-W-(R_F)_y$ , where  $R_A$  is a free-radically curable moiety, (such as a (meth)acrylate), W is a linking group and  $R_F$  is fluorinated moiety. The reference does not describe Applicant's fluorinated esters, in particular, there is no polyacyl compounds and no fluorinated polyols.

In support of the rejection, asserts that "if components 1), 2), and 3) are all condensed together as suggested by the individual patents the reaction product would have applicant's claimed limitation". Applicant's disagree. The '964 and '157 references each described fluorochemical

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fluorochemical compounds derived from free-radical polymerization. The '798 references describes fluorochemical compounds that are free-radical polymerizable. The '522 and '485 references each lack the fluorinated polyol.

In each of the rejections, the Examiner has established a prima facie case of obviousness, as required by M.P.E.P 2143. The differences between the reference compounds and the claimed oligomers has not been noted, nor has the motivation to modify the teaching of the references, alone or in combination, to meet the limitations of the instant claims. Further, there is provided no reasoned argument regarding expectation of success, if the references were to be so modified.

The rejections of claims 1-6, 8-20 and 26-28 under 35 USC § 103(a) as being unpatentable over U.S. 6,586,522 (Jariwala et al.) or U.S. 6,174,974 (Jariwala et al.) or U.S. 6,288,157 (Jariwala et al.) or U.S. 6,127,485 (Klun et al.) or U.S. 6,238,798 (Kang et al.) have been overcome and should be withdrawn. In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Respectfully submitted,

Date

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